Serotypes and Antimicrobial Resistance in Salmonella Isolates from Swine, NARMS-EB 1997-2000.

Wray, C.[1], Fedorka-Cray, P.J.[2], Headrick. M.L.[3], Gray, J.T[2]. Dillard, L.[4], Dargatz, D.A.[5], and Hermosillo, J.,

1 Collaborator, 2 USDA-ARS Richard Russell Research Center, 3 The Food and Drug Administration, Center for Veterinary Medicine, 4 USDA-FSIS, 5 USDA-APHIS-VS-CEAH Russell Research Center, 950 College Station Rd, Athens, GA 30605, E-mail address: pcray@saa.ars.usda.gov , Phone Number: (706)546-3685, Fax Number: (706)546-3066

Introduction: The National Antimicrobial Resistance Monitoring System (NARMS) was developed in 1996 as a collaborative effort between the FDA, USDA, and CDC to monitor antimicrobial resistance development in enteric organisms in humans and animals. *Salmonella* was selected as the sentinel organism.

Material and Methods: Resistance between swine isolates collected in 1997-2000 from federally inspected slaughter and processing plants (SI), and diagnostic laboratories (DI; the National Veterinary Services Laboratory and participating veterinary diagnostic laboratories) were tested against 17 antimicrobial drugs using the Sensititre^{TM} system (Trek Diagnostics, Inc.).

Results: From 1997 - 2000 (Note: 2000 data are preliminary) the most frequent serotype from SI was S. Derby. In 1997, resistance was observed (in decreasing order of frequency to Tetracycline (Tet; 56%), Streptomycin (Str; 41%), Sulfamethoxazole (Sul;37%) and Apramycin (Apr;4%). From 1998-2000, percent resistance to TetStrSul was $\geq$ 44% in each year; however, in addition to Apr^{R}, resistance was also observed to Ampicillin (Amp), Chloramphenicol (Chl), Gentamicin (Gen), and Kanamycin (Kan) in 1998, Amikacin (Ami), Amox.Clavulanic Acid (Am/Cl), and Ceftiofur (Cefti) in 1999 and of Cephalothin (Cep) in 2000. No resistance to Apr^{R}, was observed in 2000. For 1997-2000, the second most common serotype among SI was Typhimurium followed by Heidleberg in 1997 and Johannesburg for 1998-2000. Typhimurium isolates were more resistant than any other serotype. Heidelberg was only resistant to KanStrTet while little resistance was observed among the Johannesburg isolates. Conversely, for diagnostic isolates (DI), the top serotype from 1997-2000 was Typhimurium followed by Derby in 1997-98 and S. choleraesuis in 1999-2000. The third most common serotypes were S. mbandaka, Heidelberg, Derby, and Heidelberg for 1997-2000, respectively. Regardless of serotype, resistance was

higher among the DI as compared to SI. Additionally, multiple resistance was more likely to occur among DI versus SI.

Conclusions: Although *Salmonella* serotypes and antimicrobials to which resistance was observed were similar from 1997 – 2000, higher levels of resistance were found in diagnostic isolates. This should be expected since diagnostic isolates are more likely to be recovered during clinical disease for which antimicrobial therapy had been initiated. Further characterization of the isolates may identify common serotypes that persist through to slaughter and processing.